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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,286	11/13/2003	Ben Zhong Tang	016660-021.003	5667

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EXAMINER


WU, SHEAN CHIU

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 05/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/706,286	TANG ET AL. 	
	Examiner	Art Unit	
	Shean C Wu	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8 and 14-21 is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-13 and 22-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Claim Rejections - 35 USC § 112***

1. Claims 1-4, 9-13 and 22-24 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the monomers or polymers exemplified in the specification, does not reasonably provide enablement for the species not disclosed in the specification. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims. The claims are broader than the enabling disclosure. The claimed invention is not supported by examples commensurate in scope. The claimed species represented by the formula have enormous permutations. No properties are generally specified for most of the compounds. There are no teachings how one of ordinary skill in the art can synthesize the species represented by formula except the species exemplified in the specification, particularly, no guidelines for making the species containing a heterocyclic ring. LC is an unpredictable art. Without knowledge of the properties of species commensurate in scope with the claims, Applicants invite the skilled artisan to first synthesize and then test the species before a use can be undue. The properties of LC vary greatly with the number and type of rings, bonding, lateral and terminal substituents and polarities. All govern the properties of the LC and mixture thereof, which further determine the utility in one of a multitude of functionally distinct compositions and displays for optical application. Applicants claim offer little more than an invitation to experiment and even presupposing the species all can be readily made.

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2. Claims 1-4, 9-13 and 22-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The notations of "spa", "spa2", "mes", "A", "B", "C", "D" and "E" are not clearly defined. In Claim 1, the "spa" and "mes" are indefinite because what are the space group and mesogenic group are not defined. In Claim 4, the polar moieties are not clearly defined because the A and B are linking groups and C is a terminal group.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Kong et al. (Influence of Backbone Rigidity on the Thermotropic Behavior of Side-Chain Liquid Crystal Polyacetylene in Polymer Chemistry).

The reference of formula 2a anticipates the claimed polyacetylene.

5. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Kong et al. ("Synthesis of Polyphenylacetylene Containing Polar Cyano Groups" in Polymer Material Sic. & Eng. Vol. 77, pages 518-519, 1997).

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The reference polymer in Scheme 1 anticipates the claimed polyacetylene.

6. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Kong et al. ("Synthesis of Polyphenylacetylene Containing Polar Cyano Groups", paper presented at 214th American Chemical Society, National Meeting in Las Vegas, NV, Sept. 7-13, 1997).

The reference polymer in Schemes 1 and 2 anticipates the claimed polyacetylene.

7. Claim 7 is rejected under 35 U.S.C. 102(b) as being anticipated by CAPLUS 1999: 129341 and "Synthesis, Mesomorphism, Isomerization and Aromatization of Stereoregular Poly[[4-[[[6-[[[4'heptyl]oxy-4-biphenyl]carbonyl]oxy]-hexyl]oxy]]carbonyl]phenyl]acetylene", Macromolecules, Vol. 32(6), pages 1722-1730, 1999.

The compound of Poly[[4-[[[6-[[[4'heptyl]oxy-4-biphenyl]carbonyl]oxy]-hexyl]oxy]]carbonyl]phenyl]acetylene anticipates the claim.

8. Claims 9-12 and 22-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Vicentini et al. (Liq. Cryst. 1994).

The reference discloses an acetylene liquid crystalline monomer to prepare a polymer. See the abstract and the formula (A₃Cm) on second page. The properties of the acetylene monomers are shown in TABLE 1. The polyacetylenes are shown in Table 2. Also, see the section of conclusion on page 732. The reference anticipates the claimed invention.

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9. Claims 9-11 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Douglas et al. (Us 5,475,133).

The reference discloses a bis-proparyl thermoset. The monomer represented by the formula has a bisproparyl group which reads on the claimed species of third formula in the claim. See the Example 4 on col. 9.

Allowable Subject Matter

10. Claims 8 and 14-21 are allowed.

Conclusion

11. This is a continuation of applicant's earlier Application No. 10/346,360. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however,


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event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shean C Wu whose telephone number is 571-272-1393. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Shean C Wu
Primary Examiner
Art Unit 1756

scw